MICROSCAN

HE45T Quickstart Guide

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PREFACE

Welcome

Purpose of This Manual

The purpose of the manual is to get you up and running quickly and confidently with your reader.

Laser Safety

Caution
Laser in the HE45T

LASER RADIATION - AVOID LONG TERM VIEWING OF DIRECT LASER RADIATION - LASER CLASS 2M

Wavelength 630 nm - Maximum radiant power: < 1mW

EN 60825-1:2003

Note: LED Lighting

Light Emitting Diode Class 1 according to EN 60825-1:2003

Manual Conventions

The following typographical conventions are used throughout this manual:

- Items emphasizing important information are **bolded**.
- Menu selections, menu items and entries in screen images are indicated as: Operation, Configure, etc.

CHAPTER 1 Getting Started

The HE45T establishes a new benchmark for Portable Data Terminals and Hand Held computers by combining the industry's best imaging technology with a graphic display and rugged keyboard to create the smallest and lightest full-featured bar code reading terminal on the market.

Using the same ergonomic platform as the highly successful HE40T, which employs Microscan's industry leading Direct Part Mark (DPM) technology, the HE45T extends mobile all-symbology bar code reading to include information display and keyboard entry. This combination has created a reading system that supports:

- DPM applications
- Department of Defense Unique Identification (DoD UID)
- High density matrix codes and larger low density linear barcodes
- Superior working range• High-speed omni-directional decoding
- Cordless and cabled interfaces
- Portable data terminal
- Unsurpassed data rates

The HE45T features a variety of accessories including ruggedized handles. For more information or for technical support, see the Preface of the HE45T User Manual.

Attaching the H2 Cabled Handle

The HE45T uses the battery compartment to “snap to” the handle. Figure 1–1 shows the H2 handle with flexible connector. Figure 1–2 shows the battery blank.

FIGURE 1–1. H2 Handle with Flexible Connector

FIGURE 1–2. H2 Handle with Battery Blank

To attach the handle to the reader:

1. Push the 8-pin DIN connector at the end of the reader into the flexible connector at the end of the handle, as shown in Figure 1–3.

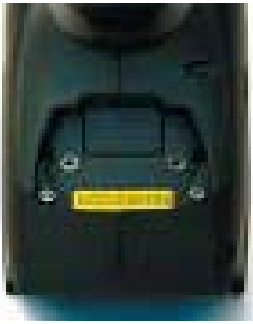
FIGURE 1–3. Attaching the H2 Handle

2. Insert the tab on the back of the handle into the reader (Figure 1–3).

3. Snap the reader onto the handle, matching the battery compartment to the battery connectors, visible inside the handle, as shown in Figure 1–3.

The HE45T can be secured further with threaded screws on the under side of the handle, as shown in Figure 1–4.

FIGURE 1–4. Location of Threaded Screws



Attaching the BH1/BH2 Battery Handle

The HE45T uses the battery compartment to “snap to” the handle. The BH1/BH2 handle is shown in Figure 1–5. The handle with battery is shown in Figure 1–6.

FIGURE 1–5. BH1/BH2 Handle

FIGURE 1–6. BH1/BH2 Handle with Battery

To attach the handle to the reader:

1. Insert the tab on the back of the handle into the reader, as shown in Figure 1–7.

2. Snap the reader onto the handle, matching the battery compartment to the battery connectors, visible inside the handle, as shown in Figure 1–7.

FIGURE 1–7. Attaching the BH1/BH2 Handle

The HE45T can be secured further with threaded screws on the under side of the handle, as shown in Figure 1–8.

FIGURE 1–8. Location of Threaded Screws

HE45T Wireless

This HE45T features a Bluetooth® wireless radio. The radio allows for point to point wireless communication with other Bluetooth devices that support serial port protocol (SPP). The following guide will give you general instructions on connecting your HE45T to a desktop or laptop computer with a Bluetooth radio.

Connecting With A QuickConnect Code

If you purchased a CodeXML Bluetooth Modem or a Belkin® Bluetooth adapter from Microscan or from an authorized distributor, a QuickConnect code was included, as shown in Figure 1–9.

FIGURE 1–9. Sample QuickConnect Code

The QuickConnect code has the information of the Bluetooth address (often a reference to go to the BD_ADDR) of that device. You can usually find the 12-character Bluetooth address somewhere on the device near the device's serial number (Figure 1–10). This code will link your HE45T directly to the desired Bluetooth device.

FIGURE 1–10. Locating the Bluetooth Address

HE45T Wireless Setup

Note: While installing the Bluetooth Configuration Manager software that was included with your Bluetooth adapter, make sure to note the Virtual COM Port number the software assigned for the adapter (e.g. COM 10). This is the COM Port your HE45T will connect through.

To connect your reader:

1. Scan the Reset to RF Factory Defaults code shown in Figure 1–11.

FIGURE 1–11. Reset to RF Factory Defaults Code

Reset to Factory Defaults

QuickConnect (Sample)
Scan the QuickConnect code that matches the Bluetooth address of your device

2. Scan the QuickConnect code you received.

3. The HE45T will automatically connect. By default, the HE45T will beep once after it connects and beep three times in a row if it did not connect.

4. Scan the Save Settings code (Figure 1–12) to the right if you want to save the wireless connection settings to the HE45T so that the HE45T will automatically try to connect wirelessly the next time it is powered on.

FIGURE 1–12. Save Settings

Save Settings

Radio Range and Transferring Data

The HE45T radio is a Class 1 device. If connected to another Class 1 device, the unit has roughly a 300 foot line of sight operating range. If connecting to a Class 2 or Class 3 device, the operating range may drop to match the lower range. Once a unit is connected, the application software on the host must be open to receive data.

When the HE45T detects the radio is out of range, the HE45T will store data on the reader's non-volatile memory.

For more information about setting up and using the HE45T with a wireless Bluetooth configuration, consult the HE45T User Manual.

HE45T Cables

The HE45T is available with USB, RS-232 and PS2 cables. All of the cables are connected to the HE45T with a 8-pin DIN connector. Different cables may be required for different hosts.

- HE45T with H2 Cabled Handle — The 8-pin DIN connection is at the bottom of the handle. Firmly push the 8-pin connector into the bottom of the handle. The cable has a locking mechanism that will firmly hold the cable in place (Figure 1–13). To detach the cable from the reader, you must pinch the plastic on the 8-pin DIN (Figure 1–13) and pull back to disengage the connector.

FIGURE 1–13. Handle with Cable Attached

Install the optional cable clip to further secure the cable to the handle with two threaded screws, as shown in Figure 1–14.

FIGURE 1–14. Securing Cable Clip with Two Threaded Screws

- HE45T with BH1/BH2 Battery Handle — Firmly push the 8-pin connector into the back end of the reader, as shown in Figure 1–15. The cable has a locking mechanism that will firmly hold the cable in place. To detach the cable from the

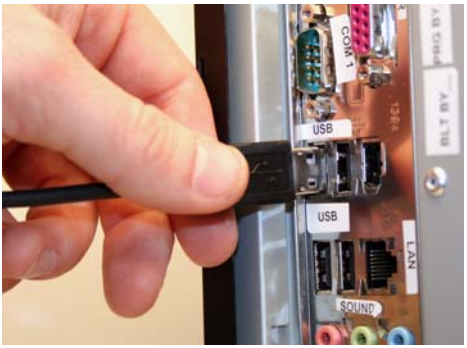
reader, you must pinch the plastic on the 8-pin DIN and pull back to disengage the connector.

FIGURE 1–15. Handle with Cable Attached

USB Cable Connection

1. Attach the USB cable to the HE45T.
2. Connect the USB cable to the host in any available USB host port, as shown in Figure 1–16. You DO NOT need to power off your host computer.

FIGURE 1–16. Connecting the USB Cable



3. Once properly connected to the host computer, the HE45T will power on and beep. The reader is shipped pre-configured.

PS2 Cable Connection

1. Power off the host computer. This process requires shutting down your computer. If you disconnect your computer keyboard while it is running, your computer will lock up.

2. Attach the PS2 cable to the HE45T.

3. If you have a cabled keyboard, detach the keyboard cable from your computer and connect that same connector to the female connection on the HE45T PS2 cable, as shown in Figure 1–17.

FIGURE 1–17. Connecting the Keyboard Cable

4. Now, connect the male HE45T PS2 connector into the keyboard port on your computer, as shown in Figure 1–18.

FIGURE 1–18. Inserting the PS2 Connector into the Computer

The HE45T is powered by the PS2 port and does not require a power supply. Once properly connected to the host computer, the HE45T will power on and beep. The reader is shipped pre-configured.

RS-232 Cable Connection

1. Attach the RS-232 cable to the HE45T.
2. Connect the RS-232 cable to your host computer.
3. The RS-232 interface has an optional power supply. If you have a power supply, plug the power supply adapter into the RS-232 cable and then plug the power adapter into a wall socket. HE45T will power on once connected.
4. If battery power (no power adapter) is being used, press one of the red buttons for one second to power on the reader. The reader is shipped pre-configured.

USB Cable Settings

- USB Keyboard Mode — Data is sent from the reader and interpreted by the host computer as if a US keyboard was being used to enter data.
- USB Downloader — Communication method used to upgrade firmware.

FIGURE 1–19. USB Codes

M134_02
USB Keyboard

M133_01
USB Downloader

M049_03
Reset to USB Factory Defaults

All other USB settings (including Virtual COM settings) may be found in the HE45T User Manual. For further instructions regarding upgrading firmware, please consult your Microscan representative.

FIGURE 1–20. Save Settings

Save Settings

PS2 Cable Settings

PS2 Mode — Data is sent from the Reader and interpreted by the host just as if a US keyboard was being used to enter data.

FIGURE 1–21. PS2 Codes

PS2 Mode

Reset to PS2 Factory Defaults

All other PS2 settings can be found in the HE45T User Manual.

RS-232 Cable Settings

RS-232 One Way Mode — Data is sent from the Reader as serial data through the RS-232 port.

FIGURE 1–22. RS-232 Codes

RS-232 One Way Mode

Reset to RS-232 Factory Defaults

RS-232 Default Settings
Mode: RS-232 One Way Mode Max Range
Baud Rate: 57600
Stop Bits: 1
Data Bits: 8
Parity: None

Baud Rates

Scan the codes in Figure 1–23 to set the baud rate:

FIGURE 1–23. Baud Rate Codes

M094_01
4800

M095_01
9600

M096_01
19200

M097_01
38400

M098_01
57600
(Default)

M099_01
115200

Save Settings

Save changes made to the HE45T configuration by scanning the code in Figure 1–24:

FIGURE 1–24. Save Settings

M188_02
Save Settings

HE45T Display

FIGURE 1–25. HE45T Display

How to Turn On the HE45T

1. Press and hold one of the red scan buttons for one second.

FIGURE 1–26. HE45T Layout

How to Scan Codes

1. Make sure the HE45T screen is at the Ready prompt (Figure 1–27).
2. Hold the HE45T a few inches away from a code (Figure 1–27).
3. Press one of the red scan buttons or the trigger on the optional handle (Figure 1–27).

   The HE45T will display data from the scanned code on its screen (Figure 1–27).

Note: By default, data is sent to the host computer if the HE45T is connected to it; data is stored in the HE45T's memory if it can't be immediately sent to the host computer. See the HE45T Display User Manual for more information on storing and sending data.

FIGURE 1–27. Turning On the HE45T

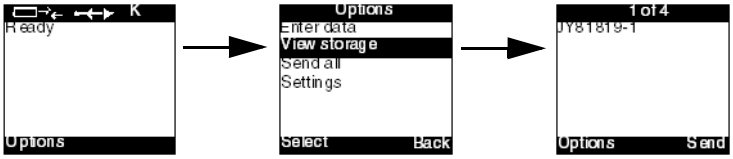
How to View Stored Data

Scanned data will be stored on the HE45T if it is not connected to a host computer or if it is set to store scanned data. Use these steps to view data stored on the HE45T.

1. Select Options from the Ready screen by pressing the soft key below the word Options (Figure 1–28).
2. Select View storage (Figure 1–28).
3. First stored data item is displayed (Figure 1–28).
4. Use the right and left arrow keys to cycle through the stored data items (Figure 1–28).

   Shortcut: From the Ready screen, simply press the right and left arrow buttons to cycle through the stored data items.

FIGURE 1–28. Viewing Stored Data

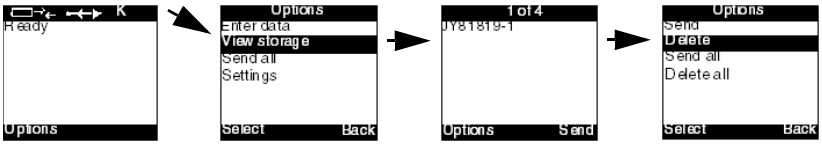


How to Delete Stored Data

1. Begin at the Ready prompt (Figure 1–29).
2. Select Options (Figure 1–29).
3. Select View storage (Figure 1–29).
4. Use the left and right arrow keys to display the item you want to delete. Select Options (Figure 1–29).

5. Select Delete (Figure 1–29).

FIGURE 1–29. Deleting Stored Data

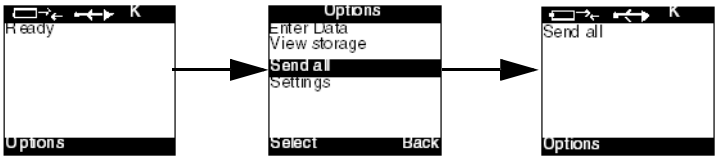


How to Transfer Stored Data to a Host Computer

1. Make sure the HE45T is attached to a host computer by cable or by a wireless Bluetooth connection.
2. The HE45T screen should be at the Ready prompt. Press the CLEAR button to return to the Ready prompt if necessary (Figure 1–30).
3. Select Options (Figure 1–30).
4. Select Send all to transfer all stored data to the host computer (Figure 1–30).

   The HE45T will display a message that all data was sent.

FIGURE 1–30. Transferring Stored Data to the Host Computer

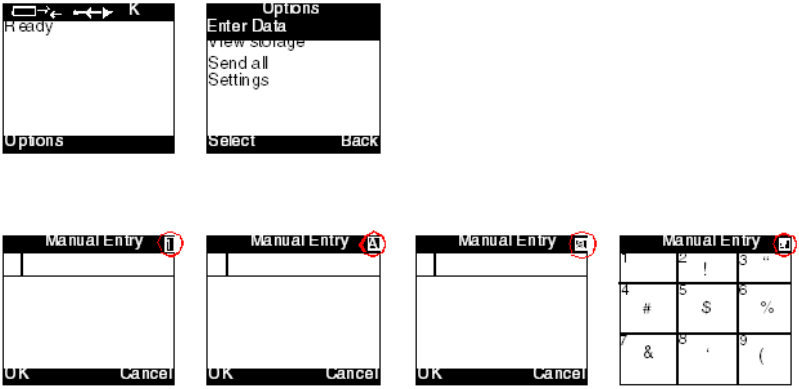


How to Manually Enter Data

1. Begin at the Ready prompt (Figure 1–31).
2. Select Options (Figure 1–31).
3. Select Enter data (Figure 1–31).
4. You can enter numbers, text, or symbols. Press the SHIFT key to toggle between entry modes. Press a key multiple times to cycle through the available letters in the text entry mode just like a cell phone. Press the 0 key multiple times to cycle through all the available symbols (Figure 1–31).

5. When done entering data, press the Enter key to send the data (Figure 1–31).

FIGURE 1–31. Entering Data Manually



How to Lock/Unlock the Keypad

To stop keys from accidentally being pressed, you can lock the keypad.

1. Press the SHIFT key and the up arrow key at the same time.

FIGURE 1–32. Locking & Unlocking the Keypad

2. Unlock the keypad so that you can use the keys again.

3. Press the SHIFT key and the up arrow key at the same time.

FIGURE 1–33. Locking & Unlocking the Keypad

HE45T Display User Manual

More information and instructions are available in the HE45T Display User Manual.

The HE45T utilizes digital camera technology to take a picture of a symbol. Once an image is captured, the HE45T utilizes Microscan's industry leading decoder to extract data from the captured image.

The H2 Cabled Handle and BH1/BH2 Battery Handle each feature a trigger on the handle. The two triggers on the top of the unit also work when the handle is attached.

FIGURE 1–34. The HE45T with Handle

Caution
Laser in the HE45T

LASER RADIATION - AVOID LONG TERM VIEWING OF DIRECT LASER RADIATION - LASER CLASS 2M

Wavelength 630 nm - Maximum radiant power: < 1mW

EN 60825-1:2003

Reading Symbols with the HE45T

1. The HE45T features omnidirectional decoding. Center the symbol in any orientation within the laser dot aiming pattern.

Note: The HE45T can read a symbol that is not centered; however, the HE45T performs best when a code is centered.

The HE45T features omnidirectional decoding. Aiming the targeting laser at the center of the symbol ensures the best performance for decoding. The HE45T can read a symbol that is not centered and, under certain circumstances if multiple symbols are within the field of view, the user must take care of which symbol is read. The decoder will start from the center, but if the center symbol is not decodable, it may decode

another symbol, if multiple symbols are present within the field of view.

FIGURE 1–35. Centering the Symbol Within the Laser Dot

2. The HE45T was developed to decode both very small 2-D symbols and larger 1-D symbols. The unit features two imagers to create an innovative dual decode zone. The HE45T features a high speed processor and decodes both zones simultaneously by default. The unit has one imager focused on a near-field for smaller codes (optimal focal point is 4 inches) and one imager focused on a far-field for larger codes (optimal focal point 9 inches). To read smaller symbols, move the HE45T closer to the symbol. To read larger symbols, move the unit farther away from the symbol. The entire HE45T decode zone varies between two (2”) and twenty (20+”) or more inches.

3. Hold the HE45T Reader still - DO NOT SWIPE OR MOVE THE READER. Press the trigger until the HE45T beeps, indicating the bar code has been successfully decoded.

Programming Codes

A programming code symbol encodes special messages used to program the HE45T.

Symbology Settings

Symbology Defaults	
Data Matrix	ON
Codabar	OFF
Code 128	OFF
Code 93	OFF
Code 39	OFF
Interleaved 2 of 5	OFF
UPC	OFF
QR/Micro QR	OFF
PDF417	OFF

FIGURE 1–36. Symbology Programming Codes

M275_01
Codabar On

M274_01
Codabar Off

M283_01
Code 128 On

M282_01
Code 128 Off

M281_02
Code 93 On

M280_01
Code 93 Off

M235_01
Code 39 On

M234_01
Code 39 Off

M244_01
I 2 of 5 On

M243_01
I 2 of 5 Off

M295_01
UPC On

M294_01
UPC Off

M297_01
UPC Extension On

M296_01
UPC Extension Off

M261_01
QR/Micro QR On

M260_01
QR/Micro QR Off

M188_02
Save Settings

FIGURE 1–37. Symbology Programming Codes (Continued)

M293_01
PDF417 On

M292_01
PDF417 Off

All 1D On

All 1D Off

M188_02
Save Settings

DoD UID Settings

The HE45T unit complies with MIL-STD-130, ISO 15434, and ISO 15418 to construct a Unique Items Identifier (UII), Current Port Number (CPN), and Lot/Batch Number (LBN).

The following UID data output options are applicable to Data Matrix only and have no effect on other symbologies:

- UII/CPN DM On — The HE45T is configured to construct Unique Item Identifier (UII), Current Part Number (CPN), and Lot/Batch Number (LBN). If there is a valid UII/CPN/LBN, a UII/CPN/LBN string is outputted. For decoded Data Matrix with invalid UII/CPN/LBN, HE45T stops image acquisition without an output string.
- UII/CPN DM with Data Fields — The HE45T is configured to construct UII/CPN/LBN with all the data fields.
- UII DM with Data Field — The HE45T is configured to construct UII and output additional data fields.

The following options apply to all symbologies:

- UII/CPN On for All Symbologies — The HE45T is configured to construct UII/CPN/LBN for all symbologies. For decoded symbologies without valid UII/CPN/LBN, the HE45T stops image acquisition without an output string.
- UII/CPN Off — The HE45T is back to normal decoder behavior without constructing UII/CPN/LBN.

FIGURE 1–38. UII Codes For All Symbologies

UII/CPN DM On

UII DM with Data Field

UII On for All Symbologies

UII/CPN Off

Save Settings

Batch Mode

The HE45T unit features a batch mode for applications requiring a portable reader. Batch mode allows a user to store scanned data to the reader's non-volatile memory. You may transfer the data to a host computer when needed. To utilize batch functionality, you will need to use the BH1/BH2 battery handle.

The HE45T dedicated batch memory is a minimum of 1MB. To determine the number of reads that may be stored, divide the average bytes of a scan into the total minimum memory.

Auto Transfer Buffer Memory

By default, when reconnected, the HE45T will automatically transfer any data in memory once a connection to a host is established. If your application is not ready, the reader will send the data anyway and the data could be lost. If you do not wish for the reader to immediately send data upon connection, please scan the Disable Auto Transfer Buffer Memory.

FIGURE 1–39. Auto Transfer Buffer Memory Codes

M075_01
Send & Buffer Mode (Default)

M072_01
Log Only Mode

M076_01
Send & Log Mode

M077_02
Transfer All Data Memory

M078_02
Transfer Only Unsent Data

M071_01
Delete Scanned Data From Memory

M070_01
Enable Auto Transfer Buffer Memory (Default)

M069_01
Disable Auto Transfer Buffer Memory

M188_02
Save Settings

Trigger Programming

Left Trigger

FIGURE 1–40. Left Trigger Programming Codes

M178_01

Read With Both Imagers (Default)

M176_01

Read With Far-Field Imager

M177_01

Read With Near-Field Imager

Right Trigger

FIGURE 1–41. Right Trigger Programming Codes

M185_01

Read With Both Imagers (Default)

M183_01

Read With Far-Field Imager

M184_01

Read With Near-Field Imager

Handle Trigger

FIGURE 1–42. Handle Trigger Programming Codes

Read With Both Imagers (Default)

Read With Far-Field Imager

Read With Near-Field Imager

Turbo Dot Peen Mode

The HE45T with the default settings offers the best overall performance for Data Matrix DPM reading. For reading dot peen marks with cell size larger than 15 mils or 0.015 inches, it is often possible to improve the reading performance by enabling the Turbo Dot Peen mode. It is also recommended that you use Read With Near Field Only mode with the Turbo Dot Peen On mode to achieve the best reading response.

Note: Turbo Dot Peen mode should not be used for reading small marks (dot peen or others) as it may increase the processing time and reduce the robustness of reading small marks.

FIGURE 1–43. Turbo Dot Peen Mode Codes

On

Off

Save Settings

Prefix Settings

If you scan the codes in Figure 1–44 and Figure 1–45, you may lose your current settings. Save settings on your reader before scanning the prefix codes. If you scan more than one prefix, you will receive each scanned prefix in your scanned data (i.e., if you scan comma prefix twice, you will get two comma prefixes). Scan the codes in Figure 1–44 and Figure 1–45 to set the appropriate prefix:

FIGURE 1–44. Prefix Codes

Prefix - Comma

Prefix - Space

Prefix - Carriage Return Line Feed (RS-232)

Prefix - Tab (RS-232)

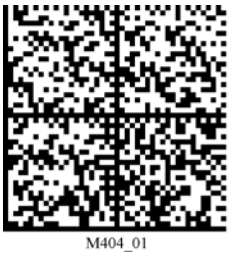
FIGURE 1–45. Prefix Codes (Continued)

M166_01

Prefix - Tab
(USB/PS2)

M188_02

Save Settings


M404_01

Prefix - Erase
This code will erase
all prefix data

Suffix Settings

If you scan the codes in Figure 1–46 and Figure 1–47, you may lose your current settings. Save settings on your reader before scanning the Suffix codes. If you scan more than one suffix, you will receive each scanned suffix in your scanned data (i.e., if you scan comma suffix twice, you will get two comma suffixes). Scan the codes in Figure 1–46 and Figure 1–47 to set the appropriate suffix:

FIGURE 1–46. Suffix Codes

M165_04

Suffix - Space

M160_04

Suffix - Comma

M161_04

Suffix - Enter
(USB/PS2)

M170_04

Suffix - Carriage Return
Line Feed (RS-232)

FIGURE 1–47. Suffix Codes (Continued)

M168_04

Suffix - Carriage Return
(RS-232)

M169_04

Suffix - Line Feed
(RS-232)

M219_04

Suffix - Tab
(RS-232)

M167_04

Suffix - Tab
(USB/PS2)

M405_02

Suffix - Erase/None
This code will erase
all suffix code

M188_02

Save Settings

Volume and Vibration Settings

Scan the codes in Figure 1–48 to set volume and vibrations settings:

FIGURE 1–48. Volume & Vibration Codes

M107_01
Vibrate On
Beep On

M109_01
Vibrate On
Beep Off

M108_01
Vibrate Off
Beep On

M153_01
Reader ID & Firmware Version

M188_02
Save Settings

Minimum Requirements

Operating Systems: Windows© 2000, XP

Interfaces: USB, RS-232, and PS2

Bluetooth™: HE45T only supports Bluetooth serial profile